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ABSTRACT

Large disparities between blacks and whites in both earnings and income have persisted during the period since World War II. In this paper estimates are presented of the contribution of labor market discrimination to the earnings differential. Lower and upper bounds on this contribution are set. Also measured is the extent to which labor market discrimination varies in severity among workers with high and low earning capacities; earnings variations by sex, as well as by race, are discussed in this context. The statistical methodology employed in this study is described in detail, and examined as to its reliability. Based upon data analyzed according to the methodology of this work, it is noted that eliminating labor market discrimination would erase from 30 to 39 percent of the total black-white earnings gap. (Author/GC)

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# INSTITUTE FOR RESEARCH ON POVERTY DISCUSSION PAPERS

## LABOR MARKET DISCRIMINATION AND BLACK-WHITE DIFFERENCES IN ECONOMIC STATUS

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# Labor Market Discrimination and Black-White Differences in Economic Status

Irwin Garfinkel, Robert Haveman
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## ABSTRACT

Many factors contribute to the black-white earnings gap, among them labor market discrimination. This paper presents estimates of the contribution of this factor to the earnings differential, and sets upper and lower bounds on this contribution. These estimates are presented at various deciles of the distribution of workers by earnings capacity. Based on these distributional estimates, the contribution of labor market discrimination to income inequality in the U.S. is measured. Finally, the reliability of the residual methodology used in this study is examined.

## Labor Market Discrimination and Black-White Differences in Economic Status

Serious disparities between blacks and whites in both earnings and income have persisted during the period since World War II. From 1946 to 1975, the ratio of black to white median income increased from about .50 to about .62 (U.S. Department of Commerce 1971; 1976). Many factors contribute to this earnings and income gap, and numerous studies have attempted to measure their relative contribution. In particular, the role of labor market discrimination has been the subject of extensive discussion and research.[1] This paper presents estimates of the contribution of labor market discrimination to the earnings differential, and sets upper and lower bounds on this contribution. It also measures the extent to which labor market discrimination varies in severity among workers with high and low capacities to earn income. Based on these distributional results, estimates of the extent to which the elimination of labor market discrimination would reduce income inequality in the U.S. are developed. Unlike previous studies, we explicitly examine the reliability of our methodology for estimating the contribution of labor market discrimination to racial earnings differences.

### 1. FACTORS CONTRIBUTING TO RACIAL INCOME DIFFERENCES

Observed differentials between black and white income and earnings can be attributed to a number of factors, some of which are manifestations of present or past discrimination against blacks. For example, of the adult population blacks were provided with less education and education of a lower quality than whites. Thus, other things being equal, blacks of prime

working age have less human capital than whites and one would expect black earnings to be less than white earnings. Black earnings would also fall below white earnings if blacks with certain characteristics are paid lower wages than whites with the same characteristics.

Other factors possibly unrelated to racial discrimination may contribute to the racial income differential. Relative to whites, for example, blacks may have a stronger preference for leisure or a stronger aversion to school attendance. Finally, the black and white populations may have different demographic structures: a smaller proportion of blacks than whites may be at the peak earnings level of the life cycle.

Of the large number of factors contributing to racial income differences all but a few can be classified in the following four categories.

Differences in human capital endowments. For a number of reasons, the black population may have a smaller stock of human capital than the white population. Past discrimination in the provision of public education may explain part of this disparity. Childhood location in regions which had relatively weak tastes for education compared to other private or public consumption or which could afford relatively less educational expenditure might be another reason. Similarly, blacks might have grown up in homes in which parents placed less emphasis on schooling and human investment than the parents of whites, or homes in which less schooling and human investment could be afforded. Finally, some would suggest that blacks simply have less innate ability than whites.

Differences in demographic structure. At any point in time, blacks may have a demographic structure (such as age structure) which places relatively few people at or close to the peak of their lifetime earnings profile. Similarly, blacks may reside in regions in which the relative wage structure

is low. A greater proportion of female-headed or larger families among blacks than among whites may also contribute to the observed differential.

Voluntary differences in work effort. Holding everything else constant, blacks may simply choose to work fewer hours in a year than whites. This factor might be manifested in a greater aversion for job search, a greater preference for unemployment or non-participation in the labor force, or a preference for occupations in which part-time, part-year jobs are heavily represented or in which the norm of hours worked is relatively low.

Labor market discrimination. Finally, employers may respond differently to the skills and abilities of blacks than to those of whites. Employers may offer a lower wage rate to a black than to a white with the same skills, make available less hours of work to the black, give preference to whites in the allocation of overtime hours, or simply hire the white before the black.

If the data on individual attributes and tastes were complete and if a statistical model incorporating these variables and their relationships were correctly specified, the contributions of each factor to observed income differentials could be discerned. In such a situation, the contribution of labor market discrimination to observed earnings differences could be statistically estimated by the following procedure. First, completely specified earnings functions of the following form would be fit for both blacks and whites:

$$E_B = a_1 + a_2 [HC]_B + a_3 [T]_B + a_4 [D]_B$$

$$E_W = b_1 + b_2 [HC]_W + b_3 [T]_W + b_4 [D]_W ,$$

where $E_B$ and $E_W$ represent the earnings of individual blacks and whites, $[HC]_B$ and $[HC]_W$ represent vectors of human capital characteristics of blacks and whites, $[T]_B$ and $[T]_W$ represent vectors of taste characteristics of blacks and whites, and $[D]_B$ and $[D]_W$ represent vectors of demographic characteristics of blacks and whites. The $R^2$ of these equations would be unity, and the vectors of regression coefficients ($a_2$, $a_3$, $a_4$, and $b_2$, $b_3$, $b_4$) would capture the effects on black and white earnings of human capital, taste, and demographic factors, respectively. Then, having fit these equations, the black HC, T, and D variables could be used in the white equation with the white regression coefficients. From this procedure, we get imputations of the earnings which blacks would have received if the labor market treated them the same as whites of identical HC, T, and D characteristics. The difference between these imputed black and actual white earnings then is due to HC, T, and D differences, and the difference between imputed and actual black earnings is due to labor market discrimination.[2]

Unfortunately, implementation of this procedure is impossible. Available data allow only incomplete identification of the vectors of HC, T, and D characteristics. To the extent that there are unobserved HC, T, or D variables, and to the extent that these variables favor whites relative to blacks, the difference between imputed black earnings and actual white earnings will be biased downward and the effect of labor market discrimination biased upward.

On the other hand, it is possible that the inclusion of some variables for which data is available may lead to a downward bias in the estimate of the importance of labor market discrimination. For example, if verbal ability depends upon what kind of a job an individual has and if the kinds of jobs black and white individuals get are based on racial discrimination,

treating labor market discrimination as a residual after controlling for verbal ability will lead to its underestimation.[3]

Moreover, there are problems associated with classifying variables for which data is available. Because the effort here is to distinguish the role of labor market discrimination from that of other factors, the most serious categorization difficulties concern variables which measure the quantity of work. The fact that black men work fewer hours per year (or experience more unemployment, have a lower rate of labor force participation, or work less overtime) than white men may be attributed to either a difference in tastes for leisure, or to labor market discrimination. The estimate of labor market discrimination depends upon how these variables are categorized.

## 2. ESTIMATING THE CONTRIBUTION OF LABOR MARKET DISCRIMINATION

Of the several factors accounting for the disparity in black-white earnings, labor market discrimination would seem to be the most amenable to policy influence.[4] In this section, our procedures in attempting to isolate the contribution of this variable to observed earnings differences between races and across the distribution of economic status are described. These procedures follow the four part categorization in section 1 and employ the two-stage methodology described there.

First, earnings functions are fit for black and white males and females using the data for individuals with positive earnings from the "Panel Study of Income Dynamics."[5] The use of separate equations for race and sex groups allows for differences in structural relationships, including the effect of labor market discrimination. The independent variables in each race-sex regression equation include the standard human capital and

demographic variables of age, years of schooling, marital status, and location. In addition, variables measuring verbal ability, achievement orientation, per pupil public school expenditures, physical disfigurement, and father's education and economic status were included in the male regressions. These earnings functions are presented in the Appendix.

Reliance on a human capital framework leads to a number of a priori expectations regarding the size and direction of the relationship between the independent variables and earnings. Thus, earnings in the early and middle adult years are expected to increase with age due to job experience and on-the-job training. In the later adult years, earnings are expected to decrease as skills become obsolete and physical and mental capacities deteriorate. Earnings are also expected to increase with education and training as measured by years of schooling, and with the quality of education (per pupil school expenditures), IQ (verbal ability), motivation (achievement orientation), and education provided in the home (parental education and income). Similarly, differences in earnings reflect both regional cost of living and real productivity differentials not captured by our other variables. Because earnings are expected to be positively related to work experience and on-the-job training, it is anticipated that women in marital and parental status categories with a smaller probability of recent work experience (e.g., married women with children) will have lower earnings than those in categories with a greater probability of recent work experience (e.g., single women without children).

Previous studies have shown that the effect of several of these variables on earnings varies with age. It has also been suggested that IQ interacts with education. Hence, the regression equations are specified

to permit these interactions. The regressions also include a measure of annual hours worked per year (constructed from number of weeks worked times average hours per week worked).

Although experimentation was undertaken with both a linear and a log-linear model, only the estimates derived from the log-linear model are reported. There are a number of a priori reasons for preferring the log-linear model. The most important consideration is the required non-negativity of predicted earnings from a log-linear model. In addition, it is likely that the variance in earnings is smaller the smaller the level of human capital. The linear model neither requires nonnegative predicted values nor positively relates the variance in earned income to the level of human capital. Finally, by standard measures, the log-linear model appears to yield a somewhat better fit than other specifications. The $R^2$ in the regressions range from .61 to .76.

Given the data, these functions minimize the domain of unmeasured characteristics which determine individual earnings. Nevertheless, some potentially relevant variables, such as appearance, are not included at all; while for others, such as IQ and education provided in the home, we only have proxy variables--verbal ability, parental income, and father's education. We assume that the remaining unmeasured characteristics are not correlated with race and other independent variables.

Even if all differences in HC and D between blacks and whites were perfectly measured in the earnings functions, it would still be necessary to make some assumption about differences between the races in voluntary work choices (T) in order to ascertain the contribution of labor market discrimination to the black-white earnings differential. Holding human

capital and demographic characteristics constant, black males work fewer hours per week than white males, while black women work more than white women. Black men are unemployed more weeks per year than white men. A larger proportion of black than white men are non-labor force participants, have part-time jobs during the weeks they work, and fail to show overtime work. This difference in work effort may be due to differences in the demand for black and white labor resulting from labor market discrimination, differences in tastes for leisure between blacks and whites, or to some combination of both labor market discrimination and T. Previous studies have not treated this taste variable consistently; some have included it in estimates of labor market discrimination, others have not. We will develop estimates of the role of labor market discrimination under both assumptions. Our lower bound estimate will assume that all such work effort differences are due to racial differences in T; our upper bound estimate will attribute all racial differences in work effort to labor market discrimination.

Finally, while we will assume that the difference between the hourly wage rates of blacks and whites with identical HC and D characteristics is due to labor market discrimination alone, one could argue that part of the difference is due to differences in T. The case would hinge on the concept of compensating variations in wage rates. Because the nonpecuniary aspects of the jobs held by blacks are generally conceded to be less desirable than those of jobs held by whites with similar HC and D characteristics, we presume that, ceteris paribus, T does not contribute to racial differences in hourly wage rates.

Employing the estimated earnings functions and the described procedures for handling the role of T in explaining racial earnings differences, we

can develop upper and lower bound estimates of the contribution of labor market discrimination (LMD). These estimates are defined more precisely in the following paragraphs.

Let the racial earnings gap among households or individuals (G) be defined as

$$G = E_W - E_B, \tag{1}$$

in which $E_W$ ($E_B$) is the total earnings of all white (black) units divided by the number of white (black) units.

In calculating a lower bound estimate of LMD we assume that all within and between race differences in hours worked (except those attributable to health status) are due to voluntary choice. These differences can be eliminated from G by substituting predicted values of black and white earnings, assuming that both races worked the same number of hours, for $E_W$ and $E_B$. We call such estimates of predicted earnings at some fixed level of work effort earnings capacity. To obtain an extreme lower bound estimate, the annual hours worked by blacks are used as the norm.[6] Hence, the amount of G that is attributable to factors other than differences in tastes ($G_T^L$) can be designated as

$$G_T^L = EC_W(H_B) - EC_B(H_B), \tag{2}$$

in which $EC_W(H_B)$ is predicted white earnings at the annual hours of a black with comparable earnings capacity and $EC_B(H_B)$ is black earnings.[7]

Having eliminated the contribution of T to G, the remaining gap ($G_T^L$) is attributable to HC, D, and LMD. As a next step, the contribution of racial differences in HC and D to $G_T^L$ can be measured by employing the white

earnings functions for estimating the earnings capacity of both blacks and whites. Black earnings capacity is obtained by using the black values of the independent variables with the white regression coefficients, in effect simulating black earnings if the labor market responded to the HC and D characteristics of blacks as it does to those of whites. From this procedure, the contribution of HC and D differences to black-white earnings differences ($G^L_{HCD}$) is expressed as

$$G^L_{HCD} = EC_W(H_B) - EC^W_B(H_B), \tag{3}$$

in which $EC^W_B(H_B)$ is predicted black earnings at actual hours worked, assuming that the labor market rewarded black HC and D characteristics as those of whites. $G^L_{HCD}$, then, is interpreted as the portion of the full earnings gap (G) accounted for by HC and D differences between blacks and whites.

Having distinguished that portion of G which is not attributable to racial differences in work effort (2), and that portion accounted for by racial differences in HC and D (3), that portion of the gap attributable to LMD ($G^L_{LMD}$) is found as the difference between $G^L_T$ and $G^L_{HCD}$:

$$G^L_{LMD} = G^L_T - G^L_{HCD} = [EC_W(H_B) - EC_B(H_B)] - [EC_W(H_B) - EC^W_B(H_B)] \tag{4}$$

$$= EC^W_B(H_B) - EC_B(H_B). \tag{5}$$

In short, our lower bound estimate of LMD is equal to predicted black earnings at actual hours worked, assuming that HC and D characteristics of blacks were rewarded as those of whites minus actual black earnings. For the population, $G^L_{LMD}$ is an average taken over all blacks who worked.

An upper bound estimate of the portion of G accounted for by LMD is obtained by assuming that none of the racial difference in hours worked--rather than all of the difference--is due to voluntary choice. In effect,

we are here assuming that the full racial difference in hours worked is due to employer discrimination. As a first step in obtaining this upper bound estimate of LMD, therefore, we substitute $EC_W(H_W)$ for $E_W$ and $EC_B(H_B)$ for $E_B$, and rewrite G:

$$G = E_W - E_B = EC_W(H_W) - EC_B(H_B). \tag{6}$$

From G, we now remove the effect of racial differences in HC and D ($G^U_{HCD}$) by employing the white earnings functions for estimating the earnings capacity of both blacks and whites. To obtain the upper bound estimate, we assume that, in the absence of discrimination, the hours worked of blacks is equal to that of whites.[8] $G^U_{HCD}$ is then expressed as

$$G^U_{HCD} = EC_W(H_W) - EC^W_B(H^*_W), \tag{7}$$

in which $EC^W_B(H^*_W)$ is predicted black earnings at predicted white hours worked ($H^*_W$), assuming that the labor market rewarded black HC and D characteristics as those of whites. The upper bound measure of the proportion of the racial earnings gap attributable to LMD ($G^U_{LMD}$) is then equal to

$$G^U_{LMD} = G - G^U_{HCD} = [EC_W(H_W) - EC_B(H_B)] - [EC_W(H_W) - EC^W_B(H^*_W)] \tag{8}$$

$$= EC^W_B(H^*_W) - EC_B(H_B). \tag{9}$$

Hence, our upper bound estimate of LMD is equal to predicted black earnings at equivalent white hours worked, assuming that the HC and D characteristics of blacks are rewarded in the market as those of whites minus actual black earnings.[9]

Because black women work more than white women, the upper bound estimate for females lacks a clear interpretation and is not presented. The upper bound estimate for families, however, is reported. Implicit in

these estimates is the assumption that black and white female hours worked would be equal in the absence of labor market discrimination against black men. Of course, to the extent that there are both hours worked and wage rate discrimination against black women, our upper bound estimates for families are biased downward.

## 3. LABOR MARKET DISCRIMINATION AND EARNINGS: SOME ESTIMATES

Table 1 presents the following empirical results: the average earnings gap; black earnings; lower and upper bound estimates of the average reduction in the earnings of black men, black women, and black families because of labor market discrimination; lower and upper bound estimates of the proportion of the mean earnings gap (G) that is attributable to labor market discrimination; and lower and upper bound estimates of the percentage increase in mean black earnings that would result from the elimination of labor market discrimination.

Several points are worth noting. For males, the estimates of LMD as a percent of the earnings gap are sensitive to assumptions about the source of racial differences in hours worked. When racial differences in T are assumed to account for the differences in hours worked, the average cost of labor market discrimination is estimated to be $1574, whereas the estimate of labor market discrimination is $2209 when racial discrimination is assumed to account for the differences in hours worked. Similarly, again depending upon the assumption regarding the source of racial differences in hours worked, the proportion of the gap attributable to labor market discrimination varies from .43 to .60.

The lower bound estimates of the proportion of the total earnings gap accounted for by labor market discrimination are comparable to those of other

researchers (see note 1, especially Gwartney, 1970; Masters, 1974; and Blinder, 1973). They suggest that the elimination of LMD would increase black male earnings by 25 percent and remove 43 percent of the earnings gap between blacks and whites. These figures rise to 35 percent and 60 percent, respectively, if the upper bound estimates are used.

Labor market discrimination against females appears to be less severe in absolute terms than against males. Our estimate suggests that if labor market discrimination were eliminated, the earnings of black females would increase by $416 or by 19 percent. The proportion of the total earnings gap between black and white females that is accounted for by labor market discrimination is greater than 100 percent. This is because black women work more than white women--thus reducing the gap in earnings.

The effect of labor market discrimination on family earnings is intermediate to its effect on male and female earnings. This is because such a large proportion--33 percent--of black families are headed by females. Thus our estimates suggest that if labor market discrimination were eliminated the mean earnings of black families would increase by from 23 percent to 30 percent. Similarly, eliminating labor market discrimination would erase from 30 to 39 percent of the total black-white earnings gap.

## 4. THE EFFECT OF LABOR MARKET DISCRIMINATION OVER THE DISTRIBUTION

The results presented in Table 1 are averages for the relevant population groups. A question of import for public policy is the extent to which the costs of labor market discrimination are distributed regressively or progressively over the population. Galbraith, for example has asserted that labor market discrimination is most severe among high economic status

Table 1

Labor Market Discrimination and the Racial Earnings Gap in the Non-Aged Population

| | Males | Females | Families |
|---|---|---|---|
| Mean Earnings Gap | $3670 | $ 349 | $4499 |
| Mean Black Earnings | 6352 | 2175 | 5808 |
| Mean Dollar Value of LMD | | | |
| Lower Bound Estimate | 1574 | 416 | 1332 |
| Upper Bound Estimate | 2209 | | 1735 |
| Mean Dollar Value of LMD as a Proportion of Mean Earnings Gap | | | |
| Lower Bound Estimate | .43 | ≈1.00 | .30 |
| Upper Bound Estimate | .60 | | .39 |
| Mean Dollar Value of LMD as a Proportion of Mean Black Earnings | | | |
| Lower Bound Estimate | .25 | .19 | .23 |
| Upper Bound Estimate | .35 | | .30 |

blacks (see Galbraith, Kuh, and Thurow 1971, p. 9FF). In this section, we seek to determine if the effect of labor market discrimination varies systematically over the black earnings capacity distribution. This distribution is formed by ranking black units by their capacity to generate earnings if they worked full-time, full-year. The measure of the severity of labor market discrimination used is the ratio of mean labor market discrimination costs in a quintile to mean black earnings in that quintile.

From (5) and (9), the lower and upper bound estimates of LMD ($LMD_L$ and $LMD_U$) in each quintile are defined as

$$LMD_L = EC^W_{BQ}(H^B_{BQ}) - EC^B_{BQ}(H^B_{BQ}) \tag{10}$$

$$LMD_U = EC^W_{BQ}(H^*_{BQ}) - EC^B_{BQ}(H^B_{BQ}). \tag{11}$$

The first term in (10) indicates black earnings in quintile Q if black HC and D characteristics were rewarded as white characteristics in the market and if both groups worked the same hours as blacks in quintile Q. The comparison made is between blacks in quintile Q and whites with identical characteristics and not whites in quintile Q in the white distribution. The second term indicates what blacks in quintile Q actually earn. The first term in (11) is the same as that in (10) except that blacks in quintile Q are assumed to work the same hours as whites having the characteristics of blacks in quintile Q.

Table 2 presents our estimates of the effects of LMD by quintile for both males and females. Estimates of the absolute cost of LMD and this cost as a proportion of mean black earnings in a quintile are shown.

Measured in absolute terms, the data for males tends to confirm Gailbraith's hypothesis. Both the lower and upper bound estimates increase

Table 2

Severity of LMD As a Function of Earnings Capacity

| | Quintile in Earnings Capacity Distribution | | | | |
|---|---|---|---|---|---|
| | 1st | 2nd | 3rd | 4th | 5th |
| | | | Males | | |
| $LMD_L$ | 1244 | 1502 | 1577 | 1583 | 1855 |
| $LMD_U$ | 1265 | 1805 | 2054 | 3015 | 2842 |
| $LMD_L/E^Q_{BQ}$ | .36 | .31 | .25 | .22 | .19 |
| $LMD_U/E^Q_{BQ}$ | ..36 | .37 | .33 | .42 | .29 |
| | | | Females | | |
| $LMD_L$ | 513 | 348 | 463 | 489 | 320 |
| $LMD_L/E_{BQ}$ | .45 | .24 | .23 | .20 | .08 |

monotonically over the distribution. Only in the fifth quintile of the upper bound estimates is this pattern absent. However, severity would seem to be more appropriately measured as a percentage of black earnings. The lower bound estimates in the second panel of the table show that this indicator of severity is inversely related to earnings capacity. Measured in percentage terms, the severity of labor market discrimination is nearly twice as large in the lowest quintile as in the highest--36 as opposed to 19 percent. The upper bound estimates indicate no systematic relationship of the severity of labor market discrimination to earnings capacity. Hence, if the severity of labor market discrimination is appropriately measured in percentage terms, Galbraith's assertion is not supported by the evidence.

In absolute terms, the effect of labor market discrimination against black females is not systematically related to earnings capacity. As a percentage of black earnings, however, the severity of labor market discrimination is inversely related to earnings capacity. The elimination of labor market discrimination would lead to 45 percent increase in earnings in the first quintile of black females, but only an 8 percent increase in the fifth quintile.

In summary, if reducing the costs of labor market discrimination is the only objective, our results provide little basis for focusing anti-discrimination policy on the top part of the earnings capacity distribution. Further, the results suggest that, especially for males, labor market discrimination is serious throughout the entire earnings capacity distribution.

## 5. INCOME INEQUALITY AND LABOR MARKET DISCRIMINATION

Income inequality in the U.S. has a distinctly racial character. Blacks are disproportionately represented in the poverty population and virtually

absent in the upper tail of the income distribution. To the extent that racial income differences are caused by labor market discrimination, policy to eliminate this factor will also reduce income inequality in general. The question is: How much reduction in income inequality would the elimination of labor market discrimination accomplish?

In this section, we attempt to answer that question. The procedure is similar to that employed in the last two sections. First, upper and lower bound estimates are obtained of the increase in earnings which would accrue to individual blacks if labor market discrimination were eliminated. Then, these estimates are added to actual black earnings to obtain lower and upper bound estimates of what blacks would earn in the absence of discrimination. Finally, Gini coefficients are computed for the non-aged population using the without-discrimination earnings estimates for black families and compared with the actual Ginis.

In Table 3, we present Gini coefficients for pre-transfer and total family income using both actual and without-discrimination earnings figures for black families. The coefficients are not greatly different. Labor market discrimination accounts for only about 3 to 6 percent total inequality.

This result is not surprising. Inequality in the total population may be partitioned into inequality within the black and white populations and inequality between these two groups. Eliminating racial labor market discrimination against blacks will have no effect on inequality within the white population and little effect within the black population. Even if labor market discrimination has a large effect on inequality between the races, elimination of it will have little effect on overall inequality because of the domination of the total population by whites.

Table 3

The Effect of Racial Labor Market Discrimination on Inequality

| | Actual Gini Coefficient | Gini Coefficient Without LMD |
|---|---|---|
| Family-Income | .479 | .451 |
| Pre-Transfer Income | .540 | .526 |

## 6. IS THE RESIDUAL METHODOLOGY RELIABLE?

The principal shortcoming of the methodology used to estimate the effect of labor market discrimination stems from the absence of unmeasured variables in the earnings functions. To the extent that these variables are correlated with both race and earnings, the estimates of labor market discrimination will be biased. For example, if blacks have a relative aversion to risk-bearing because of the low incidence of entreprenuerial activity in black communities, if such activity is positively related to earned income, and if none of the independent variables in the earnings functions capture this background characteristic, the effect of this phenomena will be attributed to and result in an overestimation of labor market discrimination. It is, of course, impossible to obtain precise estimates of how serious this problem is. But confidence in this residual-type procedure may be enhanced or reduced by using the methodology to predict the extent of labor market discrimination against a group which earns substantially less than the dominant group in society, but is not likely to be discriminated against.[10]

Just as there are differences between whites and blacks in earnings and human capital there are also differences between whites born in the South and other whites in earnings and human capital. Southern born male whites earn about $2000 less, have 1.5 fewer years of schooling, and score 6/10 of a point (on a 13 point scale) less on the ISR-OEO verbal ability test than other whites. But whereas there are strong reasons for believing that there is labor market discrimination against blacks, no substantial evidence exists for believing that there is labor market discrimination against Southern born whites. Any discrimination against Southern born

whites would have to be on the basis of accent. Yet, because about 85 percent of Southern born whites still reside in the South, any labor market discrimination against men with Southern accents would have a small effect on the average earnings of all Southern born white males.

To the extent that the estimate of labor market discrimination against Southern born whites derived from the residual methodology is close to (significantly greater than) zero, confidence in the residual methodology is enhanced (reduced). However, because there still may be omitted variables which are correlated with race but not with region of birth, our findings are only suggestive. This test of the residual methodology suggests that confidence in it is closely related to the comprehensiveness of the earnings functions on which it rests. When only the variables of years of schooling, age, current region, and city size are included in the regression equations, the lower bound estimate of labor market discrimination against Southern born whites is $600. (The comparable estimate of labor market discrimination against blacks was $1644.) When more comprehensive earnings functions (including additional variables for verbal ability, father's education and income, and per pupil school expenditures) are used, the estimate of labor market discrimination against Southern born whites was actually negative.[11] While these findings do not prove that the residual methodology yields unbiased estimates of labor market discrimination against blacks, they do increase confidence in the procedure, especially when employed with rather comprehensive earnings functions.

## 7. CONCLUSIONS

We have examined racial differences in earnings and economic status. First, the extent of black-white income differences over the distribution

of economic status was examined and the contribution of labor market discrimination to this income disparity was estimated. Then, we tested the hypothesis that labor market discrimination affects high income blacks more than those with low or middle incomes. Several findings stand out:

- Labor market discrimination accounts for from 43 percent to 60 percent of the total earnings gap between white and black males. If labor market discrimination were eliminated, the earnings of black males would increase 26 percent to 35 percent.
- The severity of labor market discrimination against black males (measured by the percentage increase in earnings that would result from its elimination) is not positively related to earnings capacity. Lower bound estimates of labor market discrimination suggest the opposite relationship for both males and females, while upper bound estimates for males suggest no systematic relationship between labor market discrimination and earnings capacity.
- Labor market discrimination accounts for a small portion--from 3 to 6 percent--of overall inequality in the U.S.

## APPENDIX

Appendix Tables 1 and 2 present the estimated earnings functions which underlie the estimation of LMD for males, females, and families. The dependent variable is the log of annual earnings.

Appendix Table 1

Earnings Functions for Black and White Males

| | Males | |
|---|---|---|
| Independent Variables | White Coefficient (t-values) | Black Coefficient (t-values) |
| Northeast | .0250 (0.6) | .2767 (4.3) |
| North Central | .0745 (2.3) | .1445 (2.8) |
| West | -.0066 (0.2) | .0842 (1.3) |
| SMSA1 | .3072 (8.7) | .3195 (6.2) |
| SMSA2 | .2502 (7.3) | .3085 (5.5) |
| SMSA3 | .0920 (2.2) | .2301 (3.5) |
| SMSA4 | .1438 (2.8) | .0361 (0.5) |
| Age | .0838 (10.7) | .0780 (5.5) |
| $Age^2$ | -.0010 (12.3) | -.0010 (6.2) |
| Education | -.0660 (3.3) | -.0531 (2.3) |
| $Education^2$ | .0027 (4.5) | .0025 (2.7) |
| Education-Age | .0009 (3.8) | .0006 (1.7) |
| Hours | .0019 (34.4) | .0022 (27.2) |
| $Hours^2$ | $-.3x10^{-6}$ (27.5) | $-.4x10^{-6}$ (20.7) |
| Major Disfigurement | -.3752 (3.2) | -.1657 (1.4) |
| Minor Disfigurement | -.2000 (3.1) | -.1765 (1.9) |
| Major Language Problem | -.0652 (0.6) | .1772 (I.1) |
| Minor Language Problem | .0122 (0.2) | .0511 (0.7) |
| IQ | .0038 (0.2) | .0114 (0.8) |
| IQ · Education | .0015 (1.1) | .0018 (1.2) |
| Training | .0852 (3.0) | .0230 (0.5) |

Table 1-- Continued

| | Males | |
|---|---|---|
| Independent Variables | White Coefficient (t-values) | Black Coefficient (t-values) |
| School Expenditures | .0003 (2.4) | .0002 (1.1) |
| DUMSHX | .0005 (0.0) | .0766 (1.3) |
| Father's Education | .0078 (2.2) | .0020 (0.4) |
| Father Not Poor | .0506 (1.9) | -.0773 (1.3) |
| Constant | 4.3635 (15.8) | 3.9848 (11.0) |
| $R^2$ | .61 | .66 |
| F | 149 | 72 |

Appendix Table 2

Earnings Functions for Black and White Females

| | Females | |
|---|---|---|
| Independent Variables | White Coefficient (t-values) | Black Coefficient (t-values |
| Northeast | .1440 (2.8) | .2761 (3.3) |
| Northcentral | .0602 (1.4) | .1022 (1.7) |
| West | .0220 (0.5) | .0953 (1.2) |
| SMSA1 | .2359 (5.1) | .3981 (5.9) |
| SMSA2 | .1910 (4.1) | .2592 (3.5) |
| SMSA3 | -.0211 (0.4) | .1787 (2.1) |
| SMSA4 | .0664 (0.9) | .1718 (1.5) |
| Age | .0487 (5.4) | .0357 (2.6) |
| $Age^2$ | -.0005 (5.8) | -.0005 (3.5) |
| Education | -.0410 (1.6) | -.0464 (1.3) |
| $Education^2$ | .0057 (6.6) | .0055 (4.4) |
| Education-Age | -.0003 (0.8) | .0002 (0.3) |
| Hours | .0026 (46.0) | .0026 (29.1) |
| $Hours^2$ | $-.5x10^{-6}$ (26.0) | $-.5x10^{-6}$ (17.0) |
| Not married - no children | .0477 (0.9) | -.0200 (0.3) |
| Not married - with children | -.0798 (1.3) | -.0920 (1.8) |
| Married - no children | .0787 (1.9) | .0129 (0.2) |
| Constant | 3.9747 (14.7) | 4.1630 (11.0) |
| $R^2$ | .76 | .72 |
| F | 307 | 143 |

## NOTES

[1]See, for example, Batchelder 1964; Wohlstetter and Coleman 1970; Guthrie 1970; Ashenfelter 1970; Vroman 1974; Blinder 1973; Christensen and Bernard 1974; Masters 1974; Gwartney 1970; Kiker and Liles 1974.

[2]The white earnings function reflects the benefits that whites derive from labor market discrimination against blacks. Thus, if labor market discrimination were eliminated black characteristics would not be rewarded quite as generously as identical white characteristics currently are rewarded. But since there are so many more whites than blacks, the effect of eliminating labor market discrimination on the white earnings function should be very small--especially compared to the effect on the black earnings function. Consequently, inserting black characteristics into the white earnings function was the procedure chosen.

[3]For example, it is likely that, ceteris paribus, the verbal ability scores of individuals with white collar jobs are higher than those of individuals with blue collar jobs. Similarly, blacks may complete fewer years of schooling than whites because the rate of return for black schooling is lower than the rate for white schooling due to labor market discrimination. In this case, the role of past labor market discrimination in accounting for the present earnings gap (and the role of current labor market discrimination in accounting for the earnings gap of the next generation of adults) will be underestimated.

[4]Whether or not a greater share of resources should be devoted to combatting labor market discrimination depends upon the marginal benefits and costs of this and alternative expenditures. As Masters (1975) has pointed out,

however, the proportion of total resources devoted to reducing racial earnings differentials that goes to combatting labor market discrimination is so small relative to the proportion of the earnings gap accounted for by labor market discrimination that it is hard to believe that the current mix is optimal.

[5]For a description of these data and analyses of them, see Morgan et al. 1974.

[6]Note that the estimate of labor market discrimination will be sensitive to the choice of the hours worked norm. If we had used either the hours of whites or 2000 hours rather than the hours of blacks, the labor market discrimination estimate would be increased. It is in this sense that the choice of black hours worked as the norm is consistent with the objectives of obtaining a lower bound estimate of labor market discrimination.

[7]More precisely, for any individual $EC_B(H_B)$ is predicted earnings given that individual's human capital, demographic characteristics, and actual hours worked.

[8]An estimate of the hours worked by a white with earnings capacity equivalent to each black observation was obtained as follows: (1) the earnings capacity at 2000 hours for each white was calculated--$EC_W(2000)$, (2) the hours worked of whites was regressed against the measure of earnings capacity, (3) the earnings capacity of each black evaluated at 2000 hours, if his characteristics were rewarded as are those of whites, was calculated by substituting the black's characteristics into the white earnings regressions--$EC_B^W(2000)$, and (4) this estimate $EC_B^W(2000)$ of black earnings capacity in the absence of labor market discrimination was employed in the hours worked--earnings capacity regression for whites to ascertain how many hours a white with comparable earnings capacity to

the black in question would work. The term $EC_B^W(H_W)$ was then re-evaluated using this estimate of $H_{WS}^*$ and designated as $EC_B^W(H_W^*)$.

[9]The upper and lower bound measures of the contribution of LMD to observed black-white earnings differentials can be stated formally as follows.

Let the earnings functions for blacks and whites be characterized as

$$E_w = \beta_w X_w + \alpha_w H_w, \tag{1}$$

$$E_b = \beta_b X_b + \alpha_b H_b, \tag{2}$$

in which $E_w(E_b)$ is the earnings of whites (blacks), $X_w(X_b)$ is a vector of human capital characteristics describing whites (blacks), $H_w(H_b)$ is a vector of the hours worked per year of whites (blacks), $\beta_w(\beta_b)$ is a vector of partial regression coefficients describing the relationship of changes in elements of $X_w(X_b)$ to changes in $E_w(E_b)$, and $\alpha_w(\alpha_b)$ is a vector of partial regression describing the relationship of changes in elements of $H_w(H_b)$ to changes in $E_w(E_b)$. Assume that these relationships are perfectly specified with $R^2 = 1$.

Observing these relationships at the means of the dependent and independent variables, we can write

$$\bar{E}_w - \bar{E}_b = (\beta_w \bar{X}_w + \alpha_w \bar{H}_w) - (\beta_b \bar{X}_b + \alpha_b \bar{H}_b). \tag{3}$$

Adding two zero terms, $(\beta_w \bar{X}_b - \beta_w \bar{X}_b)$ and $(\alpha_w \bar{H}_b - \alpha_w \bar{H}_b)$, to the right-hand side of (3), and collecting terms, we obtain

$$\bar{E}_w - \bar{E}_b = [\beta_w(\bar{X}_w - \bar{X}_b)] + [\alpha_w(\bar{H}_w - \bar{H}_b)] + [\bar{X}_b(\beta_w - \beta_b) + \bar{H}_b(\alpha_w - \alpha_b)]. \tag{4}$$

The last right-hand term of (4) can be rewritten as

$$(\beta_w \bar{X}_b + \alpha_w \bar{H}_b) - (\beta_b \bar{X}_b + \alpha_b \bar{H}_b),$$

and using the notation in the text, identified as

$$(G^{LMD})_L = EC_b^w(\bar{H}_b) - EC_b(\bar{H}_b). \qquad (5)$$

The first term in equation (5) is the amount which the black with mean human capital characteristics ($\bar{X}_b$) would earn if he worked the mean hours of blacks and if his human capital characteristics and his hours were valued in the market as white characteristics and hours are valued. The second term in equation (5) is the amount which the same black would earn if his characteristics and his hours were valued as black characteristics are valued. This is a lower bound estimate of the portion of $\bar{E}_w - \bar{E}_b$ accounted for by LMD, because it is the residual of $\bar{E}_w - \bar{E}_b$ after removal of all differences in human capital between blacks and whites (valued as the market values white characteristics) $[(\beta_w \bar{X}_w - \beta_w \bar{X}_b) = \beta_w(\bar{X}_w - \bar{X}_b)]$, and all differences between blacks and whites in hours worked per year (valued as the market values white hours worked) $[\alpha_w(\bar{H}_w) - \alpha_w(\bar{H}_b) = \alpha_w(\bar{H}_w - \bar{H}_b)]$--the first and second terms in the right-hand side of equation (4), respectively.

The upper bound estimate of the portion of $\bar{E}_w - \bar{E}_b$ accounted for by LMD $[(G^{LMD})_U]$ is obtained by attributing both the second and third right-hand terms of (4) to LMD. Hence, when only the first right-hand term of (4) is removed from $\bar{E}_w - \bar{E}_b$, the residual includes both $(G^{LMD})_L$, and all differences between blacks and whites in hours worked per year (valued as the market values white hours worked) $[\alpha_w(H_w - \alpha_w(H_b) = \alpha_w(\bar{H}_w - \bar{H}_b)]$. This residual is identified as the upper bound estimate

of the portion of $\bar{E}_w - \bar{E}_b$ which is accounted for by LMD because in addition to $(G^{LMD})_L$, it attributes all differences in hours worked between blacks and whites to LMD. Rewriting the last two terms of equation (4) and then collecting terms, we obtain

$$(\beta_w \bar{X}_b + \alpha_w \bar{H}_w) - (\beta_b \bar{X}_b + \alpha_b \bar{H}_b), \tag{6}$$

which, using the notation in the text, is identified as the upper bound estimates of the portion of $\bar{E}_w - \bar{E}_b$ accounted for by LMD:

$$(G^{LMD})_U = EC_b^w(\bar{H}_w) - EC_b(\bar{H}_b).$$

[10]This kind of test was suggested to us by Morgan O. Reynolds and William W. Brown. In an unpublished manuscript, "Discrimination and the Residual Approach," they show that, not surprisingly, holding years of schooling, scholastic achievement, sex, and race constant, individuals who currently reside in the south earn less than those who currently reside in the north. They argue that it is neither more nor less reasonable to attribute this difference in earnings to labor market discrimination than the comparable difference in black-white earnings.

We disagree for two reasons. First, a more appropriate test--which is described in the text--is to compare whites born in the south to other whites while holding current residence constant. Both living standards and costs of living are lower in the south than elsewhere. Second, there is a substantial amount of empirical documentation of the existence of racially based labor market discrimination. During the 1970s, for example, over 16,000 charges of racial discrimination were filed annually with the Equal Employment Opportunity Commission. Of the 1729 cases that were filed in 1969 in which the EEOC made either positive or negative findings by 1972

(most cases are settled short of determination) in nearly half, or 800 cases, the EEOC found that there was discrimination (Beller 1974, p. 252).

[11]Although the estimate was equal to about $300, this difference is probably not statistically significant. A test of the statistical significance of the LMD estimates is quite difficult to make. There are two standard errors that must enter the calculation. First, there is the standard error associated with the estimate of what blacks would earn if they were treated like whites. This standard error is derived from the white equation. Second, there is the standard error associated with the estimate of what blacks actually earn. The assumptions required to combine these two estimates are strong ones.

## REFERENCES

Ashenfelter, Orley. 1970. Changes in labor market discrimination over time. Journal of Human Resources 5:403-430.

Batchelder, Alan. 1964. Decline in the relative income of Negro men. Quarterly Journal of Economics 78:525-548.

Beller, Andrea. 1974. The effects of Title VII of the Civil Rights Act of 1964 on the economic position of minorities. Ph.D. dissertation, Columbia University.

Blinder, Alan S. 1973. Wage discrimination: reduced form and structural estimates. Journal of Human Resources 8:436-455.

Christensen, Sandra, and Bernard, Keith. 1974. The black-white earnings gap. Journal of Human Resources 9:376-389.

Galbraith, John Kenneth; Kuh, Edwin; and Thurow, Lester C. 1971. The Galbraith Plan to promote the minorities. New York Times Magazine August 22:9+.

Guthrie, Harold. 1970. The prospect of equality between white and black families under varying rates of unemployment. Journal of Human Resources 5:431-446.

Gwartney, J. 1970. Discrimination and income differentials. American Economic Review 60:396-408.

Kiker, B.F., and Liles, W. Pierce. 1974. Earnings, employment and racial discrimination: additional evidence. American Economic Review 64:492-501.

Masters, Stanley. 1974. The effect of educational differences and labor market discrimination on the relative earnings of black males. Journal of Human Resources 9:342-360.

_____. 1975. Black-white income differences. New York: Academic Press.

Morgan, James et al. 1974. Five thousand American families--patterns of economic progress. Vols. 1 and 2. Ann Arbor: University of Michigan, Institute for Social Research.

Reynolds, Morgan O., and Brown, William W. 1975. Discrimination and the residual approach. Unpublished manuscript.

U.S. Department of Commerce, Bureau of the Census. 1971. The social and economic status of Negroes in the United States. Current Population Reports Series P-23, No. 38. Washington, D.C.: Government Printing Office.

_____. 1976. Money income and poverty status of families and persons in the United States: 1975 and 1974 revisions. Current Population Reports Series P-60, No. 103. Washington, D.C.: Government Printing Office.

Vroman, Wayne. 1974. Changes in black workers' relative earnings: evidence from the 1960's. In Patterns of racial discrimination, eds. George von Furstenberg et al., pp. 167-187. Lexington, Mass.: D.C. Heath.

Wohlstetter, Albert, and Coleman, Sinclair. 1970. Race differences in income. Santa Monica: Rand Corporation.